What is claimed is:

1. A high-strength steel sheet having excellent workability comprising:

0.06 to 0.25 % by mass of carbon;

0.5 to 3.5 % by mass of Si; and

0.7 to 4 % by mass of Mn,

wherein mother structure of said steel sheet is ferrite, second phase structure of said steel sheet comprises martensite and the residual austenite and said second phase structure ($\alpha 1 + \gamma_R$) has an area fraction of 25 % or less based on the total structure when it is measured by image analysis,

and wherein said steel sheet satisfies the following requirements (1) to (3):

(1) the volume fraction ($Vt\gamma_R$) of said residual austenite is 5 % or more when a measurement specimen of said residual austenite is measured by saturation magnetization measurement,

(2) the ratio ($SF\gamma_R / Vt\gamma_R$) of the area fraction ($SF\gamma_R$) of said residual austenite within the ferrite particle to $Vt\gamma_R$ is 0.65 or more when the area fraction is measured by FE-SEM/EBSP, and

(3) the ratio [$\alpha 2/(\alpha 1 + \gamma_R)$] of the space factor ($\alpha 2$) of said martensite to the second phase structure ($\alpha 1 + \gamma_R$) satisfies the following expression:

$$0.25 \leq [\alpha 2/(\alpha 1 + \gamma_R)] \leq 0.60,$$

wherein the space factor ($\alpha 2$) is calculated from a

difference between the second phase structure ($\alpha 1 + \gamma_R$) and the residual austenite ($Vt\gamma_R$).

2. A high-strength steel sheet having excellent workability comprising:

0.06 to 0.25 % by mass of carbon;

0.5 to 3.5 % by mass of Si; and

0.7 to 4 % by mass of Mn,

wherein mother structure of said steel sheet is ferrite, second phase structure of said steel sheet comprises martensite and the residual austenite and said second phase structure ($\alpha 1 + \gamma_R$) has an area fraction of 25 % or less based on the total structure when it is measured by image analysis,

and wherein said steel sheet satisfies the following requirements (1), (4) and (3):

(1) the volume fraction ($Vt\gamma_R$) of said residual austenite is 5 % or more when a measurement specimen of said residual austenite is measured by saturation magnetization measurement,

(4) the average C content of said residual austenite is 0.95 to 1.2 % by mass, and

(3) the ratio [$\alpha 2/(\alpha 1 + \gamma_R)$] of the space factor ($\alpha 2$) of said martensite to the second phase structure ($\alpha 1 + \gamma_R$) satisfies the following expression:

$$0.25 \leq [\alpha 2/(\alpha 1 + \gamma_R)] \leq 0.60,$$

wherein the space factor ($\alpha 2$) is calculated from a difference between the second phase structure ($\alpha 1 + \gamma_R$)

and the residual austenite ($Vt\gamma_R$).

3. A process for producing the high-strength steel sheet of claim 1 by hot rolling, optionally cold rolling and continuous annealing, comprising the steps of:

subjecting a slab which comprises the components set forth in claim 1 to solution treatment at 1,270°C or higher for 5 hours or more;

hot rolling the slab into a steel sheet; and

subjecting the steel sheet to austempering to be wound up, after the hot rolled plate is cooled to a bainite transformation range and maintained at that temperature range for 50 to 200 seconds.

4. A process for producing the high-strength steel sheet of claim 2 by hot rolling, optionally cold rolling and continuous annealing, comprising the steps of:

subjecting a slab which comprises the components set forth in claim 2 to solution treatment at 1,270°C or higher for 5 hours or more;

hot rolling the slab into a steel sheet; and

subjecting the steel sheet to austempering to be wound up, after the hot rolled plate is cooled to a bainite transformation range and maintained at that temperature range for 50 to 200 seconds.